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AUTHOR	Veldman, Donald J.; Peck, Robert F.
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ABSTRACT

This monograph summarizes the development of the Pupil Observation Survey Report (POSR), an instrument designed to be completed by pupils in junior and senior high school classes in order to describe their teachers. The instrument consists of 38 statements followed by four choice agreement scales. Data from a single class are reduced to item means and then to scores on six factor dimensions isolated by analysis of over 100 student teachers studied in the Mental Health in Teacher Education project at the University of Texas. The monograph reviews the various published research studies on the development and applications of the instrument and includes a FORTRAN computer program for scoring the raw protocols. An example of an IBM 1230 optical-scanned answer sheet for the instrument is also included. Comparisons of factor structures obtained from analysis of data describing large samples of male and female teachers are reported, as well as an extensive series of regression analyses concerning various potential influences on pupil evaluation of teachers. This instrument is currently in use in a number of experimental studies being carried out by the R & D Center in Teacher Education. (Author)

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RMM-2

THE PUPIL OBSERVATION SURVEY

TEACHER BEHAVIOR FROM THE STUDENTS' VIEWPOINT

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The Pupil Observation Survey

Teacher Behavior from the Students' Viewpoint

Donald J. Veldman

Robert F. Peck

The Pupil Observation Survey (POSR) was developed in the course of the Mental Health and Teacher Education project at the University of Texas as one of a variety of criteria describing student teacher behavior. As an alternative to ratings by trained adult observers, student evaluations offer the advantages of a much more comprehensive sample of observed behavior, and those to be gained by averaging over the biases of a large number of judges. The weaknesses of such evaluations are any systematic biases which characterize the student judges. Among the potential sources of error are the sex and social class level of the students, as well as their ability to render objective and differentiated descriptions of teacher behavior. The grade level of the class and the subject-matter area are also potential sources of systematic differences in the evaluations of teachers.

Previous Research and Development

The POSR was an outgrowth of research with an experimental questionnaire originated by Edwin McClain (1961), which was employed as a measure of teacher behavior to be compared with student-teachers' self-perceptions (McClain and Bown, 1961).

An original set of 45 items was prepared by the authors in 1961 and administered to a series of public high school classes. Item

analysis of these data resulted in selection of 38 items to measure the following aspects of the teacher's impact on pupils:

Identification Model (4 items)

Interesting Presentations (4 items)

Firmness and Respect (4 items)

Systematic Control (4 items)

Poise and Self-confidence (4 items)

Friendliness and Interest (4 items)

Knowledge of Subject (4 items)

Democratic Procedure (4 items)

Optimism and Cheerfulness (4 items)

General Approval (2 items)

This form was administered to pupils in the classes of 48 male and 149 female student teachers during the Spring, 1961, semester. In order to determine the influence of sex-role on these pupil evaluations, 34 student teachers of each sex were selected from the larger sample, and their classes were divided into male and female subgroups of pupils. Means were computed for each teacher for each scale separately from boy and girl data, and the resulting means were compared by analyses of variance. The results were reported elsewhere in detail (Veldman and Peck, 1964). In summary, the only interaction effect between pupil and teacher sex appeared with the Identification Model scale, as expected.

During the 1961-1962 academic year, the POSR was administered to almost all classes taught by secondary level (grades 7-12) student teachers at the University. By the summer of 1962, a total of 554 teachers had been assessed, and these data (item means) were submitted

to principal-axis factor analysis, followed by varimax rotation of the 5 factors which yielded eigenvalues greater than unity. This research is also reported elsewhere in detail (Veldman and Peck, 1963). The factors emerging from this analysis were tentatively called

I. Friendly, Cheerful, Admired

II. Knowledgeable, Poised

III. Interesting, Preferred

IV. Strict Control

V. Democratic Procedure

Factor scores were computed for each of the 554 student teachers, and a variety of procedures was used to determine the reliability and correlates of these empirically derived dimensions. Separate factor analyses of the three semester subsamples of student teacher data yielded almost identical factor structures, but when factor structures for male and female teachers were compared, the correspondence was less than ideal for two of the five factors. Additional data on this problem will be presented later in this report.

Fifty of the teachers in the sample had two separate classes during their student-teaching semester, and item means and factor scores were separately computed for these classes to provide data for reliability estimation. The "split-class" correlations calculated for the five factor dimensions were .92, .72, .91, .81, and .89, indicating a satisfactory degree of test-retest reliability.

The mean factor scores of male and female teachers were compared by analyses of variance. Female teachers scored significantly higher on Factor I (Friendly, Cheerful, Admired) and on Factor V (Democratic Procedure). The factor score variables were also correlated

with scale scores from two self-report personality inventories; relatively few and low-order relationships were observed. Ratings by University supervisors of student teaching were used as the basis for dividing the sample into three levels of teaching effectiveness, and analyses of variance were computed for each POSR factor. Factors I (Friendly, Cheerful, Admired), II (Knowledgeable, Poised), and V (Democratic Procedure) yielded significant differences for both sexes. All relationships were linear positive, with the exception of Factor I for males, where both the high and low effectiveness groups had lower means than did the average student teachers.

A considerable amount of further research with the POSR instrument has been completed since publication of the findings just described. The results of these studies will be presented later in this report.

Scoring Procedures for the POSR

The original version of the instrument was mimeographed and included the instructions described elsewhere (Veldman and Peck, 1963). In order to simplify data-processing, a IBM1230 form has been prepared which contains all 38 items and answer spaces on one side of the sheet. A copy of the form may be found on a following page of this manual. No corresponding version for male teachers is available at present. These answer sheets may be processed with an IBM1230 Optical Reader, which will automatically punch an item-data card for each protocol. Although the computer program shown on a following page will not process such cards, it can be adapted to do so by methods described in a recent book by Veldman (1967).

PUPIL OBSERVATION SURVEY (POSR)

ROBERT F. PECK AND DONALD J. VELDMAN
THE UNIVERSITY OF TEXAS

IDENTIFICATION NUMBER

STUDENT TEACHER'S NAME

MY AGE _____ MY SEX (CIRCLE ONE) M F

MY GRADE 7 8 9 10 11 12
(CIRCLE ONE)

1. She is admired by most of her students.	T	t	f	F
2. She has made her subject alive and interesting for me.	T	t	f	F
3. She expects a lot from her students and usually gets it.	T	t	f	F
4. She explains her assignments clearly and completely.	T	t	f	F
5. She hardly ever gets flustered about anything that happens.	T	t	f	F
6. She seems to understand the problems students have.	T	t	f	F
7. She is never stumped by a student's question.	T	t	f	F
8. Before she decides on a new project, she often asks the students what they think.	T	t	f	F
9. She usually looks on the bright side of things.	T	t	f	F
10. She is the best teacher I have ever had.	T	t	f	F
11. I would like to be like her in some ways.	T	t	f	F
12. Her class is never dull or boring.	T	t	f	F
13. You can depend on her to be fair with you.	T	t	f	F
14. She doesn't let the class discussion get too far off the subject.	T	t	f	F
15. She always seems sure of herself in front of the class.	T	t	f	F
16. You can tell that she really likes her students.	T	t	f	F
17. She knows a great deal about her subject.	T	t	f	F
18. She never seems to order her students around.	T	t	f	F
19. She smiles most of the time.	T	t	f	F
20. I wish all my teachers were like her.	T	t	f	F
21. She sets a good example for her students.	T	t	f	F
22. She knows how to put her subject across in a lively way.	T	t	f	F
23. Students respect her because she means what she says.	T	t	f	F
24. She doesn't try to cover the lesson too fast.	T	t	f	F
25. She doesn't seem to be afraid of making mistakes.	T	t	f	F
26. She is always friendly toward her students.	T	t	f	F
27. She must have studied hard to know so much about her subject.	T	t	f	F
28. She likes to give the student a choice of how to do an assignment.	T	t	f	F
29. She always seems cheerful and happy.	T	t	f	F
30. I would like to have her as a personal friend.	T	t	f	F
31. She makes learning seem more like fun than work.	T	t	f	F
32. She doesn't let her students get away with anything.	T	t	f	F
33. She always seems to know just what she'll do next.	T	t	f	F
34. She doesn't get confused by unexpected questions.	T	t	f	F
35. She is as interested in her students as she is in her subject.	T	t	f	F
36. She seems to know more about her subject than just what is in the book.	T	t	f	F
37. She is always interested in hearing a student's ideas.	T	t	f	F
38. She is good-natured and easy to get along with.	T	t	f	F

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If the item data are collected with forms other than that for the IBM1230 machine, the responses should be transferred to a single punch card according to the following conventions:

Card Columns	Content
1-10	Identification of teacher (and pupils)
11-48	Item Scores

Each item score is determined as follows:

T = 1	f = 3	blank or
t = 2	F = 4	multiple check = 0

The coding of teacher identification should include any information that may be useful in later analysis of the teacher factor scores which will be computed by the scoring program -- such as teacher sex, grade taught, and subject matter area. Inclusion of pupil identification in this field is not necessary; it may be added to the end of the card (i.e., columns 49-80) if desired.

Computer Program for Factor Scoring

On a following page is listed a FORTRAN IV program which accepts class sets of pupil data cards and punches a single card for each class set input to the program. Each class set is terminated by a blank card, which initiates the computation of item means for the class and factor scores for the teacher concerned. Any number of class sets may be stacked for a particular computer run, and no limit is imposed on the class size. A deck of constant-cards precedes the first class set; these cards are listed with the program.

During computation of item means for a particular class, the program keeps track of the number of valid (non-zero) item scores

```
C      PROGRAM POSR
C
C  COMPUTES AND PUNCHES FACTOR SCORES FOR EACH TEACHER FOR WHOM A DECK
C      OF PUPIL CARDS IS ENTERED.
C  THE PROGRAM DECK IS FOLLOWED BY A WEIGHT DECK (NEXT PAGE), AND THEN
C      BY ANY NUMBER OF CLASS DECKS. EACH CLASS DECK IS TERMINATED BY A
C      BLANK CARD. CLASS DECKS MAY INCLUDE ANY NUMBER OF PUPIL CARDS.
C  FORMAT NUMBER 30 MAY BE CHANGED TO ACCOMODATE NON-STANDARD DATA-CARD
C      ARRANGEMENTS. USE OF IBM1230 DATA CARDS REQUIRES EXTENSIVE PROGRAM
C      MODIFICATION (SEE VELDMAN, 1967).
C
      DIMENSION A(38), S(38), W(6,38), T(38), X(38), P(38), F(6)
      READ 5, A
      READ 5, S
    5 FORMAT (5X, 15F5.4)
      READ 10, W
   10 FORMAT (10X, 6F5.4, 10X, 6F5.4)
   15 DO 20 I = 1,38
      T(I) = 0.0
   20 X(I) = 0.0
   25 READ 30, IDA, IDB, P
   30 FORMAT (2A5, 38F1.0)
      IF (IDA .EQ. IDB) GO TO 40
      DO 35 I = 1,38
      IF (P(I) .EQ. 0.0) GO TO 35
      T(I) = T(I) + 1.0
      X(I) = X(I) + 5.0 - P(I)
   35 CONTINUE
      IDX = IDA
      IDY = IDB
      GO TO 25
   40 DO 50 I = 1,38
      IF (X(I) .GT. 0.0) GO TO 50
      PRINT 45, I, IDX, IDY
   45 FORMAT ( / 5H ITEM, I3, 20H ALL ZERO FOR CLASS , 2A5)
      GO TO 15
   50 X(I) = (X(I) / T(I) - A(I)) / S(I)
      DO 55 I = 1,6
      F(I) = 0.0
      DO 55 J = 1,38
   55 F(I) = F(I) + W(I,J) * X(J)
      PUNCH 60, IDX, IDY, F
   60 FORMAT (2A5, 6F10.4)
      GO TO 15
      END
```

*** WEIGHT DECK ***

```
1MEAN330343210729060347303110732917294002692934328235192873529011356023346133327
2MEAN344233602231643353122835434211320153188432640340383581335549276753504534153
3MEAN2949928162333813184933997344013449336030
1SIGM04733041660318103246041000366803555050240302705080045260455602877030360334 8
2SIGM03541023630420103821055450319704131034550370202426033120240203980036250392 5
3SIGM04674035510283403244031490284903180035 51
W V01 V02  0378-0361 1002-0145-0794 0425          -0577-0408 1683 0246 0101 0397
W V03 V04  0037-0704-1011 3763 0844 0212          -0402 0529 1039-0327-0365 0353
W V05 V06  1354 0725-1651 0806-1143 0294           0692-0030-0004-0179-0000 0408
W V07 V08 -0916 2298 0880-1458-1380 0217          -0791-0602-0401 0309 5706 0264
W V09 V10  1218-0445-0674 0486-0000 0381          -0556-0303 1967-0542-0091 0388
W V11 V12  0149-0542 0885 0574-0274 0402          -0459-0624 2039 0269-0820 0382
W V13 V14  0856 0382-0312-0748-0138 0377           0563-0191-0608 2607-2002 0142
W V15 V16 -0515 1491 0453 0128-1219 0306           0796-0232 0060-0160-0065 0415
W V17 V18 -0209 2754-1162-0884 0319 0300           1636 0248-1816 0083 0233 0317
W V19 V20  1240-0737 0115-0130-1005 0336          -0095-0314 1819-0728-0841 0416
W V21 V22  0420 0230 0311 0042-0589 0429          -0572-0212 1768-0046-0214 0398
W V23 V24 -0175-0728-0083 2795 0939 0349          -0667-0106 1388-0525 0915 0308
W V25 V26  0194 1054-0678 0265 0134 0314           1510-0114-0681-0264-0833 0372
W V27 V28 -0096 2412-1695-0859 1999 0307          -0596-0067-0212-0507 4593 0307
W V29 V30  1256-0671 0024 0036-0960 0373           0670-0438 0446 0006-0452 0402
W V31 V32 -0427-0713 2197-0292-0491 0391          -0710-1352-0028 4385 1099 0143
W V33 V34 -0252 1273-0074 0531-0640 0323          -0517 2181 0176-0887-0797 0315
W V35 V36  0686-0277 0049 0173 0033 0412           0308 2081-2091-0133 1621 0311
W V37 V38  0785 0039-1371-0015 2590 0361           1229-0092-0095-0577-1008 0394
```

for each item, and computes the means using the appropriate N for each item. Factor scores are computed from regression equations based on the weights which are listed on page 8. These weights, as well as the means and sigmas employed, were derived from analysis of the normative sample of 562 student teachers which will be reported later in this manual. The factor scores computed by the program are thus standardized with regard to this sample -- with a mean of zero and sigma of one.

Factor Structure of POSR Items

Minor improvements in the accuracy of computer programs currently available made a re-factoring of the POSR item-mean data desirable. The basic sample was also increased from 554 to 562 teachers. A principal-axis analysis of the 38-item intercorrelation matrix (diagonal unities) again yielded five factors with eigenvalues greater than 1.0, which together accounted for 78% of the total trace. The first principal-axis factor, which accounted for 57% of the trace, is of particular interest since it measures the central focus of the entire 38-item set, and may be construed as an index of general pupil evaluation of the teacher.

Normalized varimax rotation of the five principal-axis factors yielded a structure almost identical to that reported earlier. The loadings of each of the 38 items on each of the varimax factors and on the principal axis, as well as the mean and sigma for each item, are shown in Table 1. In Table 2 are listed the items which loaded each of the factors most heavily. The changes in factor names from those reported earlier were as much a function of correlative information as of changes in the factor structure itself.

TABLE 1. MEANS, SIGMAS, AND FACTOR LOADINGS FOR ALL POSR ITEMS.

ITEM	MEAN	SIGMA	PA	V-1	V-2	V-3	V-4	V-5
1	3.3034	.4733	.9227	.6704	.2650	.5803	.1399	.1199
2	3.2107	.4166	.8634	.3767	.3336	.7058	.2472	.2067
3	2.9060	.3181	.4615	.1601	.2580	.1017	.7559	.1015
4	3.4730	.3246	.7664	.3249	.4611	.5479	.1751	.1201
5	3.1107	.4100	.6394	.6416	.3681	.0053	.2695	-.0528
6	3.2917	.3668	.8872	.7338	.2749	.4124	.1048	.1852
7	2.9400	.3555	.4725	-.0716	.7415	.3846	.0705	-.0697
8	2.6929	.5024	.5734	.2801	.0781	.3419	.0632	.7621
9	3.4328	.3027	.8283	.8353	.1474	.2630	.1550	.1601
10	2.3519	.5080	.8429	.3992	.2984	.7317	.1009	.2009
11	2.8735	.4526	.8739	.5652	.2637	.5577	.2602	.1538
12	2.9011	.4556	.8313	.3816	.2801	.7239	.2445	.1045
13	3.5602	.2877	.8188	.7369	.2891	.3228	-.0014	.1572
14	3.3461	.3036	.3096	.1743	.2425	.0200	.5646	-.2295
15	3.3327	.3348	.6645	.1283	.6983	.4061	.3323	-.0372
16	3.4423	.3541	.9023	.7817	.2272	.4238	.0926	.1860
17	3.6022	.2363	.6531	.2105	.8505	.1698	.1569	.1132
18	3.1643	.4201	.6900	.8478	.1747	.0108	.0562	.1405
19	3.5312	.3821	.7295	.8091	.0184	.3127	.0189	.0570
20	2.8354	.5545	.9046	.5557	.2780	.7097	.0624	.1325
21	3.4211	.3197	.9316	.6444	.4070	.4854	.2082	.1192
22	3.2015	.4131	.8641	.3737	.3650	.7134	.2111	.1748
23	3.1884	.3455	.7594	.3341	.3295	.3949	.6453	.2065
24	3.2640	.3702	.6703	.2742	.2638	.5792	.0634	.2683
25	3.4038	.2426	.6819	.3846	.5149	.2366	.2493	.1149
26	3.5813	.3312	.8088	.9014	.1530	.2263	.0268	.0731
27	3.5549	.2402	.6669	.3085	.7330	.1166	.0933	.3077
28	2.7675	.3980	.6669	.3715	.1878	.3907	-.0261	.6651
29	3.5045	.3625	.8115	.8511	.0754	.3408	.0706	.0721
30	3.4153	.3925	.8727	.7254	.2002	.4661	.1236	.1410
31	2.9499	.4674	.8507	.4436	.2205	.7583	.1246	.1632
32	2.8162	.3551	.3101	-.1196	.1598	.2076	.8492	.1091
33	3.3381	.2834	.7014	.2290	.6517	.3446	.3704	.0257
34	3.1849	.3244	.6854	.1571	.7876	.3798	.1757	.0209
35	3.3997	.3149	.8956	.7359	.2455	.4258	.1580	.1883
36	3.4401	.2849	.6769	.4010	.6772	.0422	.1936	.2530
37	3.4493	.3180	.7854	.7437	.1959	.1932	.0491	.4372
38	3.6030	.3551	.8567	.8640	.1887	.3452	.0029	.0761

Table 2. Items loading each POSR factor most heavily.

Principal Axis: General Evaluation

21. She sets a good example for her students.
1. She is admired by most of her students.
20. I wish all my teachers were like her.
16. You can tell that she really likes her students.

Factor I: Friendly, Cheerful

26. She is always friendly toward her students.
38. She is good-natured and easy to get along with.
29. She always seems cheerful and happy.
18. She never seems to order her students around.
9. She usually looks on the bright side of things.

Factor II: Knowledgeable and Poised

17. She knows a great deal about her subject.
34. She doesn't get confused by unexpected questions.
7. She is never stumped by a student's question.
27. She must have studied hard to know so much about her subject.
15. She always seems sure of herself in front of the class.

Factor III: Lively and Interesting

31. She makes learning seem more like fun than work.
10. She is the best teacher I ever had.
12. Her class is never dull or boring.
22. She knows how to put her subject across in a lively way.
20. I wish all my teachers were like her.

Factor IV: Firm Control

32. She doesn't let her students get away with anything.
3. She expects a lot from her students and usually gets it.
23. Students respect her because she means what she says.
14. She doesn't let the class discussion get too far off the subject.

Factor V: Non-Directive

8. Before she decides on a new project, she often asks the students what they think.
28. She likes to give the student a choice of how to do an assignment.
37. She is always interested in hearing a student's ideas.

When the five varimax factor scores were correlated with the principal-axis variable, the coefficients obtained were .6695, .4282, .5236, .2242, and .2089. Factors IV (Firm Control) and V (Non-Directive) are apparently of secondary relevance to the central focus of pupil evaluation.

Comparison of Male and Female Factor Structures

Earlier analyses of semester subsamples yielded almost identical factor-loading patterns, but when subsamples of male and female teachers were separately factored, the resulting structures after varimax rotation were partially dissimilar. Since the varimax criterion is somewhat arbitrary, and was applied independently to the two principal-axis structures, the factor analyses of male and female subsamples were repeated with N=116 and 446 respectively, and the resulting varimax structures were compared by an analytic technique (Veldman, 1967). The matrix of correlations between all combinations of the male and female factor vectors is shown in Table 3.

Although Factors I, IV, and V in the two analyses are quite similar, Factors II and III show considerable mixing across the two structures. Since the matrix in Table 3 is actually that which will carry one of the two varimax structures into maximum contiguity with the other, it is possible to implement this re-rotation of one of the structures and then assess the closeness of corresponding item vectors from the two structures. The results of this procedure are shown in Table 4.

Table 3.

Correlations Among All Male and Female Varimax-Rotated Factor Vectors

		Males' Factors				
		I	II	III	IV	V
Females' Factors	I	.89	-.17	.41	-.04	-.03
	II	-.18	.69	.69	.07	-.10
	III	-.40	-.69	.56	-.05	-.21
	IV	.03	-.09	-.01	.99	-.03
	V	-.07	-.09	.20	.03	.97

Table 4.

Similarity of Male and Female Item Vectors after Re-rotation of Varimax Factor Structures

Item	Similarity	Item	Similarity	Item	Similarity
1	.99	14	.95	27	.98
2	1.00	15	.97	28	.95
3	.85	16	.99	29	.98
4	.99	17	.99	30	.96
5	.93	18	.86	31	.98
6	.98	19	.95	32	.98
7	.98	20	1.00	33	.99
8	.91	21	1.00	34	.99
9	.99	22	.99	35	.98
10	.99	23	.98	36	.98
11	.99	24	.94	37	.96
12	.99	25	.88	38	.99
13	.99	26	1.00		

It is obvious from the strengths of the coefficients in Table 4 that the male and female factor structures can be brought into almost perfect alignment. The only POSR items which had coefficients indicating questionable correspondence were:

3. She (He) expects a lot from her (his) students and usually gets it.
18. She (He) never seems to order her (his) students around.
25. She (He) doesn't seem to be afraid of making mistakes.

The fact that the male and female factor structures <u>can</u> be brought into close alignment by appropriate rotation of their principal axes supports the factoring of the entire set of male and female protocols as a single sample, and the use of the resulting factor variables to describe the teaching behavior of members of either sex.

Some Influences on POSR Scores

As suggested earlier in this report, both pupil and teacher characteristics may be expected to influence the pupil evaluations, and hence the POSR factor scores. Analysis of some early POSR data indicated, for instance, that there were no important interactions between pupil and teacher sex which might bias pupils' evaluations of teacher behavior, although boys and girls did differ to some extent in their tendencies to rate teachers high or low on particular factors. Because pupil sex was not recorded in later data-processing procedures, this source of variation could not be included in the present analysis.

Five potentially significant types of information were included in the present design:

(a) the grade obtained by the student teacher from her University supervisor, which constitutes a rough estimate of the quality of her teaching performance in terms of the standards of professional educators.

(b) the grade level(s) taught by the student teacher. Some classes contained pupils from a variety of grade levels between 7 and 12, while others were restricted to a single grade level.

(c) the subject-matter area taught by the student teacher. Seven subject-matter categories were defined for this analysis.

(d) the social class level of the school concerned. Rather than identify each of the 33 schools in which POSR data were obtained, the schools were classified with regard to what would seem to be an important characteristic: the socio-economic level of the district served by the school.

(e) the sex of the student teacher. Previous analysis indicated that teacher sex was a significant source of variation for Factors I (Friendly and Cheerful) and V (Non-Directive). This variable was included in the present design in order to determine more precisely its influence in the presence of the other determinants.

The technique used to study these influences is known generally as regression analysis of covariance. Each of the six POSR factors in turn was used as the criterion to be predicted from the five kinds of information just described. Equations were established for each of the criteria using all five sources, and then additional equations were established which employed only four of the five sources, leaving each source in turn out of the predictor set. By comparing the predictive efficiency of the full predictor set with those of each of the five restricted predictor sets for a particular POSR factor criterion, it was possible to determine the importance of each type of predictor information in terms of the amount of criterion variance it explained beyond that explained by the other four sources.

In addition to determining the importance of each of the five kinds of information concerned, this technique also permitted the computation of expected criterion values (POSR factor scores) for hypothetical teachers who were alike in all but one of the five respects concerned. For instance, it was possible to determine the score to be expected on POSR Factor I for a male and for a female teacher who obtained the same student-teaching grade and taught the same grade the same subject-matter in schools of the same socioeconomic level -- even though two such teachers might not have appeared in the sample.

The results of these regression analyses are summarized in the following paragraphs, which describe the influence of each type of information upon the six POSR factor criteria. Although data were available for a total of 609 student teachers, the N concerned in assessing the impact of some sources was lowered because of missing data or because of the nature of the categories used.

Grade Obtained in Student Teaching Course

Expected Criterion Scores

Grade	N	Principal Axis	Friendly, Cheerful	Knowledgeable, Poised	Lively, Interesting	Firm Control	Non-Directive
A	216	.2874	.1563	.2645	.0851	.0980	.0145
A-, B+	107	.2302	.0514	.1266	.1735	.1226	.1306
B	210	-.2277	-.0327	-.1724	-.1631	-.1499	-.0822
B- and below	75	-.5829	-.2837	-.3915	-.2276	-.2571	-.1807
% variation explained		8.96	1.83	4.78	2.04	1.99	.83
chance probability		<.00005	.0086	<.00005	.0032	.0096	.2026

Inspection of this table reveals quite clearly that the pupils and the student-teaching supervisors agree to a significant extent regarding the general effectiveness of the student teachers. Significant relationships also appear for all of the rotated POSR factors except V (Non-Directive). The relationships are definitely linear with the principal axis and the first two rotated factors, but the other three factors show a common curvilinear component at the highest grade level. Apparently, very high grades do not correspond to very high scores for liveliness, control, or non-directiveness. In terms of explained variance, student-teaching grades appear to be most relevant to the principal axis (General Evaluation) and to Factor II (Knowledgeable, Poised).

Grade Level of the Class Taught

		Expected Criterion Scores					
Grade	N*	Principal Axis	Friendly, Cheerful	Knowledgeable, Poised	Lively, Interesting	Firm Control	Non-Directive
7th	136	-.0251	-.4820	.1021	.3989	.0714	.1394
8th	139	-.0366	-.1330	.1543	.0769	-.0794	-.2120
9th	178	-.1549	-.1670	.0709	-.1074	-.0648	-.0553
10th	169	.1380	.2859	-.0568	-.0416	-.1123	.0609
11th	138	.0313	.3340	-.1298	-.3217	.0762	.0325
12th	88	.0908	.6155	-.3242	-.2659	.0342	-.2002
% variation explained		.78	7.38	1.55	3.44	.41	.99
chance probability		.5035	<.00005	.1277	.0003	.8394	.3100

*N is greater than 609 because the 6 categories are not mutually exclusive.

Only two of the six factors were significantly related to grade-level information. In general, senior high school students appear to consider their student teachers to be more friendly and cheerful than do junior high students -- particularly seventh graders. The trend for Factor III is almost reversed, with the higher grade levels rating their teachers lower in this regard.

One is tempted to speculate about the seventh graders, considering their recent change from the quite different elementary school environment; their evaluations may reflect reactions to this change, to some extent. They saw their student teachers as relatively less friendly and cheerful, but more lively, interesting, and non-directive.

Another interesting break appears between the 9th and 10th grades on the first rotated factor. There is a distinct shift in attitude at this academic transition point, but the implications of this fact are not at all clear.

Subject Matter Taught to Class

Expected Criterion Scores

Subject	N	Principal Axis	Friendly, Cheerful	Knowledgeable, Poised	Lively, Interesting	Firm Control	Non-Directive
Social Sciences	121	-.0154	-.0786	.1510	-.1794	-.1471	.5147
English	157	.0514	.1418	.0329	-.0597	-.2477	.1192
Fine Arts	70	-.1741	-.4226	.3229	.0222	-.1342	-.1090
Home Ec., Business	85	.1665	-.0459	-.2017	.3834	.2607	.1757
Foreign Language	30	-.2165	.2858	.0077	-.6068	.1378	-.6565
Math - Science	94	-.2741	.2880	-.1864	-.4901	-.1750	-.4613
Physical Education	52	.3765	-.0758	-.1278	.9020	.7665	-.7495
% variation explained		3.20	3.53	1.92	14.16	7.91	13.29
chance probability		.0033	.0007	.0909	<.00005	<.00005	<.00005

As might be expected, Factors III (Lively, Interesting) and V (Non-Directive) were strongly affected by the subject-matter area of the class in which the POSR was administered. Although there is no way to separate the two aspects of this influence, much of the effect is probably due to the nature of the class, as opposed to the nature of the teacher concerned.

Physical Education was evaluated highest. The scores were very high for liveliness and interest, firm control, and directiveness.

Home Economics and Business was also evaluated highly. It was seen as lively and interesting, firmly controlled, and non-directive, but not very knowledgeable or poised.

English was evaluated at an average level. The ratings suggested weak control, more than average friendliness, and less than average directiveness.

Social Science was evaluated at an average level. Non-directiveness was the defining characteristic, but liveliness and control were rated quite low, while knowledge was rated high.

Fine Arts was evaluated considerably below average. Knowledge and poise were considered very high, but scores on friendliness were very low. Control was rated below average also.

Foreign Language was evaluated quite low. Directiveness and lack of liveliness and interest were characteristic, although friendliness and control were rated above average.

Math and Science received the lowest evaluation. Although friendliness was rated quite high, liveliness and interest were rated very low, directiveness was strong, and knowledge, poise, and control were rated below average.

These results indicate that POSR evaluations of single teachers cannot be compared safely to normative values which do not differentiate among subject-matter areas. Expected values for physical education teachers, for instance, are almost a full standard deviation above the general average on Factor III (Lively and Interesting) -- a deviation which almost certainly reflects the character of the subject matter rather than the teachers concerned.

Socioeconomic Level of the School

Expected Criterion Scores

Socioeconomic Level	N	Principal Axis	Friendly, Cheerful	Knowledgeable, Poised	Lively, Interesting	Firm Control	Non-Directive
1 (low)	99	.2224	-.0087	.1501	.4898	-.3858	.0202
2	133	-.0314	-.1050	-.0243	.0300	.0261	.1678
3	113	.0055	.0608	.0484	-.0767	.0966	-.1406
4	91	-.0898	-.0955	.0439	-.0964	.0955	-.0444
5 (high)	137	-.0814	.2208	-.0646	-.2957	-.0213	-.2023
% variation explained		1.22	1.28	.82	6.01	2.52	2.11
chance probability		.1383	.0858	.3840	<.00005	.0050	.0104

Only Factor III (Lively and Interesting) appeared to be influenced markedly by this source of variation. The lowest socio-economic group rated their teachers highest on this dimension, while the highest level group rated their teachers quite low. The lowest group also rated their teachers low on Firm Control, but the other groups did not deviate much from the general average. The same effect

appeared with the principal axis (General Evaluation) and with Knowledgeable, Poised, where the lowest-level group rated their teachers considerably higher than did the other groups.

Sex of the Teacher

Expected Criterion Scores

Sex	N	Principal Axis	Friendly, Cheerful	Knowledgeable, Poised	Lively, Interesting	Firm Control	Non-Directive
Males	116	-.1810	-.2698	.0082	.0048	-.1364	.0773
Females	493	.0334	.0858	.0082	-.0302	-.0011	-.0461
% variation explained		.56	1.51	.00	.02	.23	.20
chance probability		.0467	.0012	1.0000	.7047	.2116	.2258

The only important influence of teacher sex appeared with Factor I (Friendly, Cheerful), where females obtained higher ratings than did males. The previously-mentioned finding of a sex difference on Factor V (Non-Directive) did not hold up in the present analysis where the effects of the other sources were held constant statistically.

Summary of Effects on Each Factor

Factor I (Friendly and Cheerful) was influenced primarily by the grade level of the students taught (7%). A total of 23% of the variance of this factor was accounted for by the five sources included in the design.

Factor II (Knowledgeable and Poised) was influenced strongly by teacher ability (grades) (5%). A total of only 9% of the variance of this factor was accounted for by all sources.

Factor III (Lively and Interesting) was very heavily influenced by the subject-matter area (14%) and was also a function of the socioeconomic levels of the schools (6%). A total of 27% of the variance of this factor was explained.

Factor IV (Firm Control) was most strongly influenced by the subject-matter area (7%). A total of 14% of the variance was explained by all sources.

Factor V (Non-Directive) was very much influenced by the subject-matter area (13%). A total of 19% of the variance was explained.

The principal axis (General Evaluation) was most strongly influenced by teacher ability (9%). A total of 15% of the variance was accounted for by all sources together.

Discussion

The results contained in this monograph indicate that pupils' observation reports of student teacher behavior can provide reliable and valid indices for use in research applications which compare groups. The findings also suggest that the interpretation of POSR profiles for individual teachers must be approached with considerable caution due to significant variation in expectations among subject-matter areas and pupil social-class levels.

Because no evaluation of observed behavior can be separated entirely from the nature of the situation and of the task being performed during the observation, nor from the character of the observer himself, data obtained by this or any other observational technique will inevitably be more difficult to interpret on a normative basis than will

indices obtained from self reports or from artificially controlled performance tests. However, it would be erroneous to conclude from the results of the regression analysis that pupil evaluations cannot be relied upon as measures of teacher behavior. In the first place, some of the "external" influences concerned are undoubtedly measuring both teacher and situational variables. For example, some of the explanatory power of the subject-matter fields is undoubtedly due to systematic differences in the kinds of teachers who select these fields, as well as the impact of the subject-matter itself upon the pupils' evaluations. The same mixing of effects is probably true of the grade-level variable. Despite the fact that particular influences had demonstrable effects on the pupil evaluations, relatively little of the variation among teachers was explained by the sources measured. There is a great deal of variation here which needs to be identified in further research. The most obvious potential sources are teacher personality, attitude, and physical appearance.

Unlike ratings of observed behavior by adult judges, pupil evaluations have the advantage of averaging a large number of individual biases. They are also the product of observing the teacher on many occasions under "normal" conditions, and hence avoid many of the obvious problems encountered in typical "one-shot" classroom observations. With the availability of automated data-processing procedures, it would appear that the use of pupil evaluations as one facet of a comprehensive assessment battery for teachers is very much warranted. Pupil evaluations should not be considered apart from other indices, any more than self-reports should be used as the sole basis for estimating a teacher's characteristics and potential. They do provide important information, however -- from a unique viewpoint.

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